

SOME NEW RECORDS OF AQUATIC HEMIPTERA
FROM NORTHERN MICHIGAN WITH THE
DESCRIPTION OF SEVEN NEW
CORIXIDAE.¹

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For the past four summers the writer has been collecting and studying the aquatic hemiptera of the region about Douglas Lake, Michigan. Two new *Mesovelia* (1, 2)² and one *Buenoa* (3) have been taken and described from the immediate neighborhood of the Michigan Biological Station. Collecting trips have been made to Nigger Creek, just north of Topinabee, to the north shore of the southern peninsula and to Mackinac Island. Several interesting records to the list of the water bugs of the region may be added to those published by Roland F. Hussey (4) in 1919. One of these is *Nepa apiculata* Uhler, a single female specimen of which was taken by Dr. Paul S. Welch in Maple River, the outlet of Douglas Lake. Maple River leads from the west end of Douglas Lake to Burt Lake. The specimen was taken August 15, 1919.

Marked changes in the water bug population have taken place since the collections made by Miss Eva G. Miller (now Mrs. Paul S. Welch) in 1913 and by Mr. Hussey in 1918. Indeed great changes have been noted since my first experiences in the region in 1923. That year Smith's bog was a very rich collecting ground for *Notonecta borealis* Bueno & Hussey. I took two or three hundred specimens and could have collected many more. *Notonecta irrorata* Uhler was also common beneath the shady, overhanging shelter of the alders. In the summer of 1925 this splendid collecting place was dry. This was Hussey's station XII. Sedge Point pool has continued to supply *Notonecta borealis* Bueno and Hussey as the dominant member of the genus with *Notonecta irrorata* Uhler a good second. This magnificent pool became practically dry by the end of the season 1925 but is flourishing again in 1926. The *Notonecta borealis* Bueno and Hussey is abundant but the other members of the genus are very scarce

¹ Contributions from the Biological Station of the University of Michigan, Douglas Lake, Michigan.

² Numbers in parentheses refer to the bibliography.

indeed. The *Buenoae* which were very abundant in this pool hitherto appear to be scarce in 1926. *Notonecta lunata* Hungerford (= *Notonecta variabilis* Fieb. et al.) (5) which was reported by Miss Miller and by Mr. Hussey as common in Bessey Creek is still to be taken there. This species and *Notonecta undulata* Say are exceedingly abundant by the Nigger Creek bridge north of Topinabee. Much confusion between pale examples of *N. undulata* Say and *Notonecta lunata* Hungerford has occurred. The two species are readily distinguished by the fact that the former has a rounded mesotrochanter and the latter an angulate mesotrochanter. I secured *Notonecta insulata* Kirby, as well as *N. borealis* B. & H. and *N. irrorata* Uhler, from a pool on the east shore of Mackinac Island but few specimens of Kirby's species from the vicinity of Douglas Lake and those from Sedge Point pool. *Ranatra fusca* P. B. is abundant in Sedge Point pool and several other places but no specimens of *Ranatra nigra* H. S. (= *R. protensa* Mont.) have been taken.

There are numerous interesting records of Corixidae to be added to the Michigan state list but these are appearing elsewhere. The following new species were taken within the territory designated above.

Arctocorixa decoratella sp. n.

Size: Length 7.5–8 mm.; width across the eyes 2.2 mm.

Color: Very dark—the pale lines dark and on tegmina very slender. About nine, more or less faint, pale transverse lines on pronotum. The slender pale bands of clavus parallel and straight on basal half, somewhat wavy on distal half. Corial lines slender and slightly undulate and broken. Margin of outer angle of corium pale. Membrane dark brown with faint slender wavy pale lines.

Structural characteristics: Pronotum and tegmina rastrate, rear half of pronotum marked by several distinct transverse depressed lines, often accentuating the transverse bars. Metaxyphus of medium length, lateral lobes of prothorax slender. Pala long and narrow in both sexes, that of male as shown in Fig. 14. Strigil small, ovoid, six rows of teeth, the anterior rows short. Male genital capsule as shown in Fig. 3.

Described from 12 specimens taken on Mackinac Island by the writer August 19, 1925.

Holotype, allotype and paratypes in University of Kansas Museum.

Comparative Notes: General shape of pala similar to *A. decorata* Abbott. This is however a smaller species and has a metaxyphus that is of the usual form rather than like that of Abbott's species.

***Arctocorixa douglasensis* sp. n.**

Size: Length 5.8 mm., width across eyes 1.6 mm.

Color: General color light. Head, limbs, body and lines of dorsum pale yellow. Pronotum crossed by six pale bands. Clavus and corium marked by longitudinal wavy pale bands which are broadest at base of clavus. Three of these undulate bands on clavus, outer two parallel with claval suture; four on the corium, the outer one bordering the embolium which is pale yellow. The dark pigment of pronotum and wings reddish brown.

Structural characteristics: Head rounded, inner margins of eyes parallel. Eyes more remote from the rear margin of the head than in many Corixids. Pronotum with longitudinal carina on anterior portion, surface shining. Tegmina smooth and shining. Pala in both sexes thin. Female pala of usual form, that of male as shown in Fig. 8. Metaxyphus long and slender (see Fig. 5). Male strigil long and slender, of six striæ. Right clasper of male genital capsule slender (see Fig. 1).

Described from 29 specimens, 11 males and 18 females, taken by the writer in the region of Douglas Lake, Michigan.

Holotype, allotype and some paratypes in University of Kansas collection. Others in the Museum of Zoology at Ann Arbor, Michigan.

***Arctocorixa macropala* sp. n.**

Size: Length 5.3 mm., width across eyes 1.7 mm.

Color: General impression dark. The dark pigment rich brown, almost black. The pale lines and markings of thorax and tegmina reddish yellow. Head, limbs and thorax pale yellow, basal segments of abdomen sometimes dark in color. Six pale bands on pronotum, the nearly black bands prominent, pale markings of tegmina slender, irregular, short transverse lines and spots.

Structural characteristics: Head bluntly conical. Inner margin of eyes slightly divergent. Face of male depressed and dorsum of head with distinct median longitudinal carina. The rear margin of head flattened, rastrate and medially pro-

duced. Slight median longitudinal carina on anterior third of pronotum, the surface of which is rough. Tegmina roughened by coarse rastrations. Metaxyphus short, broadly triangular (see Fig. 6). Male strigil small, longer than broad, composed of about 4 striæ. Right clasper of male genital capsule thickened at base with terminal half turned at nearly a right angle (see Fig. 9). Male pala as shown in Figure 11.

Described from 12 specimens taken at Douglas Lake, Michigan.

Holotype, allotype, and paratypes in Kansas University collection.

Comparative notes: This is a very striking species readily distinguished by the characters above enumerated. The large pala of the male suggested the name chosen to designate this species.

***Arctocorixa minorella* sp. n.**

Size: Length 6.4 mm., width across the eyes 2 mm.

Color: General color rather dark, pronotum crossed by 6 or 7 pale lines. Pale lines of clavus and corium short, transverse and irregular in shape; tip of corium pale, membrane brown with suffused pale mottlings. Embolium smoky black in darker specimens. Venter black in dark males.

Structural characteristics: Body plump, head and pronotum short. Pronotum, clavus and basal two-thirds of corium somewhat rastrate. Metaxyphus long, slender. Lateral lobes of prothorax broad, face short. Pala of male as shown in figure 10. The right clasper of male genital capsule enlarged at tip as shown in figure 12. Strigil long and slender, three striæ. Pala of female not distinctive.

Described from 20 specimens from Douglas Lake, Michigan.

Holotype, allotype, and paratypes in University of Kansas Museum collection.

Comparative notes: General appearance like *A. minor* which was named by Dr. Abbott as a variety of *A. nitida* (Fieb.).

***Arctocorixa michiganensis* sp. n.**

Size: Length 6.8 mm., width across eyes 2.1 mm.

Color: The general color same as for most corixids. The brown pigment dominant over the yellow. About six yellow bands on pronotum, the pale markings of tegmina in the form of short, thin, transverse lines, the longer ones of which are irregularly undulate. Membrane smoky brown covered with irregular pale blotches except on margin. Limbs and

thorax yellow, abdominal venter brownish, front margin of hind tibia reddish brown.

Structural characteristics: Head short but broad, inner margin of eyes divergent. Metaxyphus long. Male strigil long and slender with five somewhat irregular striæ. Pala of male as shown in drawing (see figure 15).

Described from a long series from Douglas Lake, Michigan region.

Holotype, allotype and some paratypes in Kansas University Museum. Others in Museum of Zoology, University of Michigan, Ann Arbor, Michigan.

Comparative notes: This corixid is of average size and is distinguished by the broad rounded cap-like head fitting closely over a short rounded pronotum, the shining surface of the dorsal aspect and by the structural characters mentioned above.

Arctocorixa solensis sp. n.

Size: Length 5.7 mm., width across head 1.7 mm.

Color: General color same as for most corixids. The pronotum crossed by six pale bands. The pale bands on base of clavus prominent and radiating obliquely from margin of pronotum, and basal part of hemelytral suture. The pale lines on distal half of clavus slender, irregular and more or less broken. Those of corium, slender transverse and irregular and broken. Pale line separates corium from membrane which is mottled in the usual fashion. Head, venter and limbs pale yellow. Basal segments of abdomen sometimes dark.

Structural characteristics: Head short, rounded; face long, inner margin of eyes divergent. Pronotum and tegmina somewhat rastrate. Metaxyphus long and slender. Strigil of male circular, of four striæ. Pala of male as shown in drawing (Fig. 13).

Described from 24 specimens from the Douglas Lake region.

Holotype, allotype and paratypes in the University of Kansas collection.

Comparative notes: This species is best recognized by the pale obliquely radiating lines on the base of the clavus.

Arctocorixa variabilis sp. n.

Size: Length 5.6 mm., width across eyes 1.6 mm.

Color: General color very dark, nearly black, the usual yellow bars almost obliterated; faintly visible on pronotum

and base of clavus. These are replaced on distal half of clavus and on corium by irregular spots of variable arrangement, often entirely blotted out by a solid color of brownish black. A pale line separates the corium from the membrane and in some specimens the embolium, claval suture, hemelytral suture and a median longitudinal line of pronotum are yellow. Limbs and ventral side of body yellow except basal abdominal segments which are usually dark. Pale bars on pronotum usually five when distinguishable.

Structural characteristics: Head with faint median carina between rows of impressed dots. Similar row of dots bordering the inner margin of the eye. Interocular space narrower in male than in female and vertex prominent. Pronotum and clavus coarsely rastrate. Membrane shining and mottled with pale blotches. Metaxyphus broad and short. Pala of female of usual form but depressed on back side; that of male greatly thickened and carinate on back side. Face of pala in male provided with row of 21 or 22 pegs; distal margin of pala thin and bent anteriorly (see Fig. 7). Male strigil transverse and provided with about 5 striae. The so-called face of the head in both sexes long and slender.

Described from a series of 25 specimens, 7 females and 18 males, taken by the writer from Nigger Creek, Mullett Lake, near Topinabee, Michigan, and a small series taken from the St. Croix River, N. B., on October 23, 1893, by W. C. Kendall. The latter series belongs to Cornell University.

Holotype and allotype in University of Kansas collection. Paratypes in Cornell collection.

Comparative notes: This species in general appearance reminds one of *Arctocorixa hydatotrepes* Kirkaldy but is readily separated from that species by the thickened and carinate male pala and by the very different shape of the male genital capsule and claspers.

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PLATE XIII.

NEW CORIXIDAE FROM NORTHERN MICHIGAN.

- Arctocorixa decoratella* sp. n.
 Fig. 3. Male genital capsule.
 Fig. 14. Male pala.
- Arctocorixa douglasensis* sp. n.
 Fig. 1. Male genital capsule.
 Fig. 5. Metaxyphus.
 Fig. 8. Male pala.
- Arctocorixa macropala* sp. n.
 Fig. 6. Metaxyphus.
 Fig. 9. Male genital capsule.
 Fig. 11. Male pala.
- Arctocorixa minorella* sp. n.
 Fig. 10. Male pala.
 Fig. 12. Male genital capsule.
- Arctocorixa michiganensis* sp. n.
 Fig. 15. Male pala.
- Arctocorixa solensis* sp. n.
 Fig. 4. Male genital capsule.
 Fig. 13. Male pala.
- Arctocorixa variabilis* sp. n.
 Fig. 2. Male genital capsule.
 Fig. 7. Male pala.